

## XVIII.—SOME NEUROPTEROID INSECTS FROM THE MALAY PENINSULA.

By NATHAN BANKS.

(with forty figures).

The material sent is almost wholly from the Malay States of Selangor, Perak, and Pahang, but some is from the adjacent Siamese part of the Malay Peninsula. Some of it is from mountains up to 6,000 feet. It was largely collected by Mr. H. M. Pendlebury, though some insects were taken by Messrs. C. Boden Kloss, H. C. Abraham, M. R. Henderson, E. Seimund, and I. H. N. Evans. Altogether there are 107 species. Very little has been described or recorded from this area. Some years ago the late Mr. C. F. Baker spent a month or more at Singapore and sent me the *Neuroptera*.

In general the fauna is similar to that of India and Indo-China, but more particularly to that of Sumatra. Where the group has been published upon, as the *Perlidae* and *Berothinae*, there is little new; but in other groups about twenty-five per cent are new species. In the true *Neuroptera*, especially the *Myrmeleonidae* and *Chrysopidae*, many species are spread from India to the Philippines, and practically all of the genera are common to this general region. One notable exception is a species of *Phylocentropus*, a genus hitherto known only from the United States.

### PERLIDAE.

#### *Kalidasia kraepelini* Klap.

From Pahang: Cameron's Highlands, 4,800 ft., Jan., March; Kuala Teku, December. One female is over 50 mm. expanse. Described from Jor Camp between Perak and Pahang.

#### *Kamimuria kelantonica* Klap.

From Pahang: Sungai Tahan, December, and Kuala Teku, December. Described from "Kelantan Os. Malakka."

#### *Euryplax ochrostoma* Klap.

Pahang: Cameron's Highlands, 4,800 ft., March, Oct.; and Sungai Ringlet, 3,500 ft., March. Several females which agree generally with the description especially in having the very large ventral plate. Klapalek did not refer to this in his later work (Selys Monograph). It was described from "Presqu'ile de Malacca."

#### *Neoperla luteola* Burm.

From Pahang: Sungai Tahan, Dec.; Johore: Lubok Kedondong, N.W. of Mt. Ophir, Nov.; Pahang: Lubok Tamang, 3,500 ft., June; Selangor: Kuala Lumpur, January,

March; Pahang: Kuala Teku, December; Kedah: Catchment Area, near Jitra, April; and Penin: Siam: Nakon Sri Tamarat, Khao Ram, Feb., March, May.

**Neoperla fallax** Klap.

From Pahang: Cameron's Highlands, 4,800 ft., March, Oct.; Gunong Tahan, Padang, 5,500 ft., Dec., and Perak: near Jor Camp, 4,200 ft., September.

**Neoperla minutissima** Enderl.

Selangor: Kuala Lumpur, January, March.

**Eetrocorema ahenobarba** Klap.

From Perak: Batang Padang, Jor Camp, March, Sept., Pahang: Cameron's Highlands, 4,800 ft., January, Oct.; and Penin: Siam: Nakon Sri Tamarat, Khao Ram, March.

**Oodeia dolichocephala** Klap.

From Pahang: Sungai Tahan, December, Perak: Jor Camp, 2,000 ft., May, August, Sept., and Penin: Siam: Nakon Sri Tamarat, Khao Ram, March.

**Ochthepeptina violaris** Enderl.

From Kedah Peak, 1,000-2,000 ft., 14 March.

**Ochthepeptina aeripennis** Enderl.

One female from Pahang: Cameron's Highlands, 4,800 ft., March.

**Javanita fascipennis** sp. n.

Head and pronotum dark brown to black, thorax and abdomen pale yellowish, tip of abdomen black; setae dark on basal part; antennae very pale yellowish, basal joint darker; front and mid-legs mostly dark brown, but basal two-thirds of femora pale; hind legs have base of femur, apical third of femur, and the tarsi black, tibia almost white. Fore-wings slightly embrowned at base, then rather yellowish at least on front part to near anastomosis, just before the anastomosis out to near tip is a broad dark brown band, the extreme tip hyaline-white; hind-wing similar, but the brown is not so dark and the basal costal area not as pale, the extreme tip is hyaline-white; venation of both pairs dark in dark parts, and pale in pale areas. Head fairly broad, and eyes well arched; ocelli small, more than twice their diameter apart, and about as far from the eyes; boss small, much in front of the ocelli and close to the eyes. The pronotum much broader in front than behind, about as long as broad behind, with three carinae near middle, the sides rugose. Wings rather narrow, costal cross-veins faint, radial sector beyond anastomosis with one branch; six or seven median and also cubital cross-veins; setae as long as abdomen.

**Expanse 16-17 mm.**

From Penin: Siam: Nakon Sri Tamarat, Khao Ram, Feb., March.

**Nemoura atrissima** Samal.

From Pahang: Cameron's Highlands, 4,800 ft., March, Oct.; and Gunong Tahan Padang, 5,500 ft., December.

### SIALIDAE.

**Hermes sumatrensis** Weele.

From Kedah Peak: 3,000-3,930 ft., March; Selangor: Ginting Simpah, and Perak: Batang Padang, Jor Camp, 1,800 ft., June.

**Hermes maculipennis** Gray.

From Pahang: Kuala Teku, 16 February, one specimen; it is more common on Java.

**Neochauliodes sundaeicus** Weele.

From Perak: Batang Padang, Jor Camp, 1,800 ft., March, and Selangor: Kuala Lumpur, 7th. mile Cheras Road, 28 April.

**Neochauliodes simplex** Walker.

One from Pahang: Gunong Tahan Padang, 5,550 ft., 30 Nov.

More common to northward.

### ITHONESIDAE.

**Rapisma viridipennis** Walker.

From Pahang: Sungai Ringlet, 3,500 ft., March; Fraser's Hill, 4,200 ft., Sept., and Penin: Siam: Nakon Sri Tamarat, Khao Luang, 2,000 ft., March.

The dried specimens are yellowish rather than greenish; two have a few dark dots on the fore wings.

### CHrysopidae.

#### CHrysopinae.

**Ankylopteryx trimaculata** Girard.

From Selangor: Kuala Lumpur, Febr., March, June; Perak: Batang Padang, Jor Camp, 1,800 ft., May; Penin: Siam: Nakon Sri Tamarat, 8 April. Common in the Malay region; I believe that *A. sigillaris* Gerst. is the same form.

**Ankylopteryx polygramma** Gerst.

From Perak: Batang Padang, Jor Camp, 1,800 ft., March; Selangor: Kuala Lumpur, March; Pahang: Tahan River, December.

**Sencera anomala** Brauer.

From Kedah: Catchment Area, near Jitra, April.

I have seen no specimens from New Britain, but the many from Borneo do not differ from Malay Peninsular specimens, so I think that *S. scioneura* Navas is the same form. Brauer distinctly notes the absence of the advisory veinlet: it is hardly a good genus as *A. doleschali* Brauer has the cell extremely small.

**Nothochrysa aequalis Walker.**

Selangor: Kuala Lumpur, April; Langkawi Island, West Coast, April. Widely distributed.

**Nothochrysa ludekingi Weele.**

From Selangor: Kuala Lumpur, Nov.; Langkawi Island, West Coast, April. I think *N. ignobilis* Navas is the same. It differs from the rather larger *N. infecta* Newman (=subcostalis Navas) in having dark antennae.

**Leucochrysa abnormis Albarda.**

From Selangor: Kuala Lumpur, 2 Aug. Found in most of the Malay region, but never very common.

**Leucochrysa lunigera Gerst.**

From Pahang: Fraser's Hill, 4,000 ft., Jan. The third cubital cell is normally divided and differs also from *L. abnormis* by black outer gradates, several short cross-veins from radius to sector and several near origin of radial sector.

**Chrysopa splendida Weele.**

From Langkawi Isl., West Coast, April. Known from Java, Borneo, Philippines. *C. faceta* is the same form.

**Chrysopa rizali Bks.**

One from Kedah: Catchment Area, near Jitra, 10 April, and one from Selangor: Kuala Lumpur, Oct. is a very pale specimen but showing distinctly the dark dot between antennæ. Known from Sumatra, Borneo Philippines.

**Chrysopa eurycista Navas.**

From Selangor: Kuala Lumpur, May. Known from various parts of Malay region.

**Chrysopa jaluitana Kempny.**

From Selangor: Kuala Lumpur, January, April, Oct. All four specimens have a pair of dark dots on the face, which I have not seen in any specimens from Oceania; but otherwise these agree closely with Fiji specimens. *C. deutera* Navas is the same, and there are closely related forms in Australia. Weele records specimens under *C. vicina*.

**Chrysopa esakii Petersen.**

From Selangor: Bukit Kutu, 3,000 ft., April; and Kedah Peak, 3,300 ft., 24 March. It was described from Sumatra. I think *C. fascialis* Navas and *C. julia* Navas from Java are the same form; related to *atrioris*, but the gradates are dark.

**Chrysopa atrioris Banks.**

From Selangor: Kuala Lumpur, 2 Febr.; and Langkawi Isl., West Coast, April. Described from Singapore, and occurs in the Philippines.

***Chrysopa physophlebia* Navas.**

From Selangor: Kuala Lumpur, Sept.; Pahang: Fraser's Hill, 4,000 ft.; Perak: Batang Padang, Jor Camp, 1,800 ft., May.

***Chrysopa ochracea* Albarda.**

Selangor: Kuala Lumpur, June, Dec.; Langkawi Isl., W. Coast, April; and Penin: Siam: Nakon Sri Tamarat, Khao Ram, Febr.

Described from Sumatra and known from Java.

***Chrysopa crassoneura* Weele.**

From Pahang: Cameron's Highlands 4,800 ft., 17 Oct.

***Chrysopa nigribasis* Bks.**

Described from Island of Penang.

***Chrysopa necrota* Bks.**

Described from Singapore.

***Chrysopa winkleri* Navas.**

From Pahang: Gunong Tahan Padang, 5,500 ft., 22 Jan.

Described from Borneo in a new genus, *Bornia*, because of the three series of gradates; the number of gradates of the middle series is variable and may be reduced to two; so I think it is hardly a generic character.

***Chrysopa neglecta* sp. n.**

Closely related to *C. ochracea* Alb.; pale yellowish throughout, but both pairs of palpi black; a faint red spot on cheek under eye; antennae pale, but beyond middle becoming brown, nearly as long as wings. Pronotum broader than long, scarcely narrowed in front. Wings moderately long and narrow, stigma pale yellowish, veins wholly pale, or sometimes one or two gradates faintly darker, and two or three cross-veins near base of wing dark; divisory veinlet ends beyond the cross-vein, 13 to 14 cross-veins between radius and sector; fore-wing with gradates parallel, and about as near each other as each to margin and to sector, seven in inner series, eight or nine in outer series, over 20 costals, costal area moderately slender; in hind wings five or six inner, and seven outer gradates.

Expanse 28 to 30 mm.

From Pahang: Cameron's Highlands, 4,800 ft., Oct., March; June.

***Chrysopa perturbata* sp. n.**

Pale yellowish; black spot each side under eye, a narrow reddish line from edge of clypeus to eye, a reddish spot from upper base of antennae to eyes; antennae and palpi unmarked. Mesonotum with a large dark red-brown spot each side, narrowly connected in middle, and each side extended out in a reddish mark on extreme base of wing. Venation pale, legs pale, unmarked. Wings rather long and narrow, acute at tips; radial sector but little curved, second cubital cell long, not much swollen above, divisory veinlet

ending beyond cross-vein above, cubital cross-veins at end of third cubital cell and three beyond oblique; ten radial cross-veins; six to seven in gradates, the two series parallel, the first about as near radial sector as to second series, hind-wings slender, unmarked; three or four inner gradates, five or six outer, inner series nearer to radial sector than to second series. Pronotum short, much narrowed in front.

Length fore-wing 10 mm., width 3.8 mm.

From Selangor: Kuala Lumpur, 5 May.

The species of *Chrysopa* from this region are tabulated below.

1—With three series of gradates in fore-wing, body unmarked .. . . .	<i>winkleri</i> .
With but two series of gradates in fore-wing .. . . .	2
2—Antennae black, basal joints pale, pronotum rather broad .. . . .	3
Antennae pale, except toward tip .. . . .	4
3—Fore-wings more than 15 mm., pronotum bordered with reddish, gradates usually dark .. . . .	<i>ruficeps</i> .
Fore-wings less than 15 mm., pronotum usually not bordered, gradates usually pale .. . . .	<i>eurycista</i> .
4—Two short dark stripes on vertex, and a transverse dark line across posterior part of pronotum, wings not spotted .. . . .	<i>jaluitana</i> . ( <i>deutera</i> Navas).
No such marks .. . . .	5
5—Wings with golden iridescent spots near tips, when viewed obliquely; many dark marks on the wings .. . . .	<i>splendida</i> .
No such golden spots .. . . .	6
6—Mesothorax with black marks .. . . .	7
Thorax without black marks .. . . .	10
7—Median and lateral dark stripes on the pronotum, many veins black in basal part .. . . .	<i>necrota</i> .
Pronotum without median dark stripe .. . . .	8
8—Pronotum dark on sides, many broadly margined veins, mostly in the apical part of fore-wing, stigma plainly yellow .. . . .	<i>rizali</i> .
Pronotum not dark on sides .. . . .	9
9—Costal area at base very broad, and costal vein dark for several cross-veins .. . . .	<i>nigribasis</i> .
Costal area at base, rather slender and narrowed, costal vein not dark, veins mostly pale .. . . .	<i>perturbata</i> .
10—Outer gradates swollen as also base of the outer forks, veins mostly pale .. . . .	<i>crassoneura</i> .
Outer gradates not swollen .. . . .	11
11—Gradates black or brown .. . . .	12
Gradates pale as other veins .. . . .	14

12—Face marked with several red spots and lines, second joint of antennae rather dark, basal joint with streak on outer side, small species .. .. .. .. ..	<i>esakii.</i>
Face not so marked .. .. .. .. ..	18
13—Dark dot between bases of antennae; traces of dark on thorax or wings .. .. .. ..	<i>rizali</i> (pale).
No such dark dot; female with several veins toward base swollen .. .. .. ..	<i>physophlebia.</i>
14—Palpi wholly pale, no marks on face .. ..	<i>ochracea.</i>
Palpi marked with dark .. .. .. ..	15
15—Face much marked with red or almost black, basal joint of antennae dark or partly so .. ..	<i>atrioris.</i>
Face barely if at all marked with red, antennae pale, unmarked .. .. .. ..	<i>neglecta.</i>

## APOCHRYSSINAE.

The Indomalayan genera of *Apochrysinae* can be separated as follows:

1—Costal area of fore-wings, and the cubital area also of but series of cells .. .. .. ..	2
Costal area and cubital area of two or more series of cells .. .. .. ..	<i>Joguina.</i>
2—First gradate series runs up obliquely to the radial sector .. .. .. ..	<i>Synthochrysa.</i>
First gradate series bends and runs parallel to the radial sector .. .. .. ..	<i>Nobilinus.</i>

*Synthochrysa* (of which *Oligochrysa* is a synonym) contains three species, *evanida* Gerst., *stigma* Gir., and *gracilis* Pet.

*Joguina* contains besides the type species, *nicobarica* Brauer, only the new species, *malayana*.

*Nobilinus* contains several forms. *N. aurifera* from Ceylon has the first spot before or at middle, in others beyond the middle. *N. insignata* Navas and *N. phantoma* Gerst. have very broad wings, with large round dark spot, the apical spot absent. *N. albardae* McLach., *N. coccinea* Brauer and *N. bellula* Bks. are very similar, usually showing a small apical spot, and the first spot rather elongate. The differences described in marks of head and thorax may not be constant, and all be but one species.

*Joguina malayana* sp. n.

Pale yellowish face, part of vertex, and basal joint of antennae reddish; thorax wholly pale; last two segments of abdomen brown, the two segments before these black, base of abdomen pale; legs wholly pale. Fore-wing with rounded black spot before middle on first gradate series, and another not much smaller toward tip, a few veinlets

near these spots and some outer gradates black, else venation pale, hind wing with spot toward tip, none on first gradate series; the latter series, the outer gradates, and a few veins near the spot black, other veins pale. Costal area of fore-wings with the cells divided by a series of cross-veinlets for most of distance, between radius and its sector also two series of cells for most of the distance, the middle area of wings irregularly divided into many cells, so one cannot distinguish gradate series except by the spots thereon, behind the cubitus to the margin there are also two or three or in parts four rows of cells. In hind-wings the costal area is simple, between radius and its sector there two cells in a few places, in the middle area of wing many cells, but not as many as in fore-wings, behind cubitus to the margin there are two or three series of cells for part way; the hind-wings are much narrower and a little longer than the fore-wings.

Length fore-wing 25 mm., width 12 mm.

From Selangor: Kuala Lumpur, Sept., and Negri Sembilan: Bukit Tangga, Sept. Differs from *J. nicobarica* Brauer in having but one spot in hind-wings and the costal area of fore-wings with but two series of cells, and near the stigma with but one series.

## HEMEROBIIDAE.

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***Micromus morosus*** Gerst.

Kedah Peak, 2,500-3,000 ft., May; Selangor: Bukit Kutu, 3,500 ft., Sept. Known from Java.

***Micromus pusillus*** Gerst.

Selangor: Kuala Lumpur, Feb., March, July, Nov., Dec. Known from Sumatra, Java, Philippines, etc. *M. callidus* Hagen is very closely related, but the fore-wings are more heavily marked with brown, and veins more spotted.

***Hemerobius frontalis*** Hagen.

From Pahang: Fraser's Hill, 4,000 ft., Jan. A little darker than Hagen's types, but have the long face, and the venation the same; the third radial sector forked four times. *H. sumatrana* Navas seems to agree, having the face marks, the marks on vertex, and the venation the same.

***Hemerobius incursus*** sp. n.

Face short, not produced below as in *H. frontalis*; pale yellowish, a faint spot each side near eye beneath; palpi marked with black; antennae pale yellow; vertex pale, unmarked; pronotum pale with dark sides; legs pale yellowish to white; wings with pale veins, streaked with dark brown, gradates and several cross-veins near base dark, a larger spot where medius and cubitus are connected; faint clouds

here and there on wing, the base behind largely clouded, but mostly near cross-veins and gradates; hind wings unmarked except tips of a few veins near apex dark; stigma not distinct in either pair. Costal area of fore-wing moderately broad; three radial sectors, the third forked three times; five inner gradates, the second (from behind) more basad than others; six or seven outer gradates. In hind-wing three inner and six outer gradates, all rather scattered.

Expanse 14 to 15 mm.

From Pahang: Gunong Benom, 6,000 ft., 27 July to 4 August.

#### BEROTHINAE.

##### *Acroberotha nicobarica* Navas.

From Langkawi Islands, West Coast, Malay Penin., 15 April; Selangor: Kuala Lumpur, 28 Oct.; Pulau Lallang, West Coast, Malay Penin., 23 Nov., N. Borneo: Samawang, 9 July; N. Borneo: Bettotan, 17 Aug. The number of branches to radial sector varies from seven to nine; the Bornean specimens do not differ from the Malayan ones.

##### *Berotha borneensis* Navas.

From North Borneo: Bettotan, 16 Aug.; and Malay Penin: Kedah Peak, 3,000 ft., 28 March. I see no difference in these specimens; the gradates are the same; I have seen no Formosan specimens, but doubt if *puncticollis* is different.

##### *Berotha piepersi* Weele.

From North Borneo: Kudat, 5 Sept.; and Malay Penin: Kedah, Catchment Area, near Jitra, 3-6 April. Also occurs in Java and the Philippines; it may be only a form of the Indian *B. insolita*, but the wing apex is rather more bluntly truncate, quite distinct from *B. indica* which I have seen only from Ceylon.

#### OSMYLIDAE.

##### *Spilosmylus conspersus* Walk.

From Selangor: Bukit Kutu, April; Perak: Batang Padang, Jor Camp, 1,800 ft., Sept., and Oct. and Pahang: Sungai Ringlet, 3,500 ft., March. The male differs from the female (= *tuberculatus*) in that there are two cubito-median cross-veins before fork of median, and in having spots between subcosta and radius and extending forward into the costal area.

#### DILARIDAE.

##### *Rexavius marmoratus* sp. n.

Pale yellowish, clothed with yellow hair; legs pale, dark at tip of femora, middle and tip of tibiae, and tip of tarsal joints. Antennae of male with 21 joints with long processes, the joints longer than in *R. nietneri*, but not as long as in typical *Dilar*. Wings faintly marked with narrow

wavy brownish bands across, a distinct cloud over the second chitinous dot, many cross-veins dark, and also forkings dark. First chitinous dot much before fork of median, second dot plainly before second branch of second radial sector, the two dots closer than in most species, and the first nearer to base of wing than in any other Asiatic species. Between radius and second radial sector six to eight cross-veins, between median vein and its fork two veins, also two between median fork and cubitus, and two between cubitus and its fork, and one between cubital fork and first anal, and one from first to second anal; inner gradate series of six or seven veins, outer of six to eight. The two series of gradates are further apart than in *R. nietneri*. Female paler than the male (perhaps not fully colored), the ovipositor as long as abdomen and thorax. Related to *R. nietneri*, but the wings more slender, and thus the branches of cubitus and cubital fork to margin are shorter. The brown bands on fore-wing also separate it from typical *R. nietneri*, though one of the types has many brown marks, but irregularly arranged.

Length fore-wing ♂ 9.5 mm. ♀ 7.5 mm.

From Peninsular Siam: Nakon Sri Tamarat, Khao Luang, 2,000 ft., March.

#### **CONIOPTERYGIDAE.**

*Malacomysa cerata* Hagen.

From Pahang: Gunong Tahan Padang, 5,500 ft., Dec., Selangor: Kuala Lumpur, Aug.; Selangor-Pahang border, The Gap, 2,700 ft., Aug.

#### **MANTISPIDAE.**

*Euclimacia simulatrix* McLach.

One from Kedah Peak, 2,000-3,000 ft., 30 March; also from Singapore (Baker coll.). A very striking species.

*Eumantispa strenua* Gerst.

From Malacca: Rim, Feb., and Perak: Gunong Kledang, Nov., rather widely distributed.

*Eumantispa quadrituberculata* Westw.

Selangor: Kuala Lumpur, Febr.; known from various parts of India.

*Mantispa amabilis* Gerst.

From Pahang: Kuala Teku, 9 Dec. and Langkawi Islands, West Coast of Malay Penin., 25 April. Fairly widely spread.

*Mantispa annulicornis* Gerst.

From Selangor: Permatang Est. Banting, 3 May; Johore: foothills near Mt. Ophir, Oct.; Pahang: Kuala Lipis, 28 May; Selangor: Kuala Lumpur, 10 June; Pahang: Jerantut, Batu Balei, March; and Anamba Island, South China

Sea. Very common in the Malay region, and quite variable in size and the amount of markings, but pattern constant.

### MYRMELEONIDAE.

#### Genus, *Phanoleon* gen. n.

A *Dendroleonini* (with radial sector much before the cubital fork, second anal running in even curve, basal fork to cubitus, legs extremely slender). Spurs equal two tarsal joints, basal tarsal joint equal to fifth; pronotum very slender. Generally near to *Dendroleon*, but the fore-wing broad, the costal area very broad, even more so than in *Borbon* and *Nuglerus* but at once separated from these and *Dendroleon*, *Neglurus*, etc. by a double series of costal cells, the lower series are less numerous and broader than the upper series, the two series extends almost to the base of the wing. Hind wings longer than fore-wings, acute at tip, costal area slender, one-celled, one cross-vein before radial sector. Antennæ slender, clavate, palpi short. Genotype, the following species:—

#### *Phanoleon bicostatus* sp. n. (Fig. 24.)

Head pale, a broad shining black band above and below antennae, vertex brownish; palpi pale; antennae annulate with dark, long and slender. Pronotum pale above, a faint median dark stripe, hardly evident in front, the lower sides and pleura deep black which extends back across the pale meso- and metapleura as a broad black stripe; thoracic notum mostly black, the scutelli more or less pale; abdomen dark on tip, pale on base with two broad dark bands; legs pale, all femora with dark median and apical bands, premedian, band on tibial and faintly at tip, tarsi with apical joints dark. Hair of pronotum long, erect, mostly black, that of legs long, scattered, mostly white.

Venation largely brown, longitudinal veins often white in streaks, and the cross-veins sometimes wholly pale (not dotted). Behind the radius some cross-veins margined with brown, and a long oblique brown streak up from rhegma, a curved streak at end of anal vein, some spots beyond, near hind margin, the outer edge of the pale stigma and some spots behind and obliquely outward dark; between the subcosta and radius a series of dark spots; hind wings with venation largely brown, some scattered brown spots near tip, rhegma, and outer hind margin.

Abdomen much shorter than hind-wings; pronotum twice as long as broad. Fore-wings rather broad toward tips, hind-wings narrowed, slightly concave on outer margin toward tip, no cross-veins in apical areas, venation here very dense; in fore-wing three cross-veins before radial sector in each wing.

Length: fore-wing 23 to 28 mm; hind-wing 25 to 31 mm.

Two specimens, larger one marked Malay Penin: other Kedah: Catchment Area, near Jitra, 5 April.

The related genera of *Dendroleonini* from this general area can be tabulated as follows:

1—Costal area of fore-wings very broad .. ..	2
Costal area not especially broad .. ..	4
2—A double costal series of cells in the fore-wing <i>Phanoleon</i> . Only a single series of costal cells .. ..	3
3—A distinct banksian line in fore-wings; one cross-vein before radial sector in hind-wings .. <i>Borbon</i> . No distinct banksian line, just the outer beginnings; two cross-veins before radial sector in hind-wings .. .. .. <i>Nuglerus</i> .	
4—Second and third anals united at one point .. <i>Acratolen</i> . Second and third anals only connected by a cross-vein .. .. .. ..	5
5—Outer margin of fore-wing concave; one cross-vein between first and second anals, large species .. .. .. ..	<i>Neglurus</i> .
Outer margin of fore-wing scarcely if at all concave; two cross-veins between first and second anals .. .. .. ..	<i>Dendroleon</i> .

*Gatzara* is scarcely different from *Dendroleon*, *Bofia* equals *Nuglerus*, *Bullanga* and *Cuca* I do not know but are evidently related to *Dendroleon*, both have a single costal series.

My *Dendroleon sumatrana* is the same as *Borbon regius*, less plainly marked. *Dendroleon javanus* will also go in *Borbon*.

#### *Nuglerus maculatus* Navas.

One from Selangor: Bukit Kutu, 3,000 ft., 17 April.

Described in genus *Bofia*; I have a photograph of the type of *Nuglerus scalaris*, said to be from Brazil. It is almost identical with this specimen of *Bofia maculatus*. The cross-veins between the cubital and anal veins are all more or less as in *maculatus*, and all equally marked with black, while in *scalaris* a few cross-veins are not oblique and are not margined with dark, while the oblique ones are more heavily marked than in *maculatus*. It is highly improbable that such closely related species can come from South Asia and Brazil.

#### *Neglurus vitropennis* Navas.

From Selangor: the Batu Caves and vicinity, August, Sept.

#### *Distoleon dirus* Walker.

Several from Selangor: Kuala Lumpur, Jan., May, June, July, Nov.; and Langkawi Islands, West Coast, May.

**Neuroleon** sp.

One specimen from Langkawi Island, West Coast, April.

Possibly near to *Salvaza cornuta* Navas from Tonquin, Indo-China, but several statements in description do not fit very well.

**Pseudoformicaleo jacobsoni** Weele.

Several from Selangor: Kuala Lumpur, Febr., June, and July at light, and Langkawi Islands, April. Petersen has placed as synonyms *Tahulus caligatus*, *T. asthenicus*, and *T. ignobilis* all of Navas, and the descriptions agree very well with these specimens. I however doubt very much if the Australian *P. costatus* is the same. I have but one specimen of *costatus*; in this the marks are clustered so that there are large pale areas; for example, before the stigma on both wings there is a large pale area, and the subcosta and radius unmarked, while in *jacobsoni* there are dark marks all over the veins leaving only very small pale areas. The wings are more slender than in the Australian species.

**Indoleon tactitus** Walk.

Several from Selangor: Kuala Lumpur, March. One of the most handsome species of the family.

**Hagenomyia eurystictus** Gerst.

From Selangor: Gombak Valley, Oct.; Perak: Batang Padang, Jor Camp, 1,800 ft., February.

The type was from Rangoon; it also occurs in Java and the Philippines.

**Hagenomyia nicobaricus** Brauer.

From Selangor: Kuala Lumpur, Jan.

Type was from the Nicobar Islands, and it also occurs in New Guinea, Philippines, and other islands. The *M. papuensis* Weele is, I believe, the same form.

**Hagenomyia sumatrana** Weele.

From Langkawi Islands, West Coast, Malay Penin., April; smaller than the other species.

The type was from Sumatra, and it also occurs in Celebes, Siam, and Indo-China. The *M. celebensis* Weele and *M. nitens* Navas I consider the same form. *M. nigrinus* Petersen is a dark form with lateral prothoracic spot only in front; of two specimens from Lombok one is *nigrinus*.

The three species of *Hagenomyia* found in this region are widely distributed, but are often confused; they can readily be separated by the markings of the pronotum (Fig. 30).

1—Pleura wholly dark; pronotum with only the anterior lateral corners pale; lower face pale, not spotted;

- upper face from below antennae and including vertex wholly dark, no pale spots; spurs plainly longer than basal tarsal joint .. *eurystictus*.
- Pleura pale, marked with a dark stripe .. . . . 2
- 2—Lateral margin of pronotum broadly pale, a more or less distinct narrow pale median stripe; often spots on clypeus, and the vertex spotted with pale .. . . . *sumatranaus*.
- The lateral margin pale only in front, the pale mark extending obliquely back and tapering, where it is sometimes connected to a small pale spot near the posterior angles; clypeus with one or two dark spots; vertex spotted, but often mostly dark .. . . . *nicobaricus*.

**Myrmeleon celebensis McLach.**

Several from Selangor: Kuala Lumpur, in Jan., Febr., and May; Perak: Taiping, June; Langkawi Islands, West Coast, Malay Penin., April.

This is readily separated from *frontalis* by having five cross-veins before the radial sector in hind wing and that the first two or three are bent at upper end; in *frontalis* four unbent cross-veins.

**Sogra negligens Navas.**

From Langkawi Islands, West Coast, April. Fairly widely distributed in Indo-China.

### PANORPIDAE.

**Neopanorpa infuscata sp. n. (Fig. 26a.)**

Black; rostrum and legs pale, tarsi darker; antennae black, basal joint pale; meso- and metanotum with large pale spot each side; last three segments of male abdomen pale, as also extreme tips of three preceding segments. Wings dull, sordid to fumose, apex of wing from base of stigma usually pale dull brownish, with a large white spot behind stigma containing two or three hyaline cross-veins, a more or less evident spot or band over first chitinous dot, and an oblique mark or band before it; hind wings dark at tip, none of the apical marks with definite margins, and sometimes but little darker than rest of wings, but the stigma always wholly dark brown. The process of the third segment triangular and reaching about two-thirds across fourth segment; eighth segment not very broad, the ventral appendages long and entire.

Female marked as the male.

Length of fore-wing 13 mm.

From Perak: Batang Padang, Jor Camp, 1,800 ft., May, June; also Pahang: Lubok Tamang, 3,500 ft., June; and Penin: Siam: Nakon Sri Tamarat, Khao Luang, 2,000 ft., March.

Distinguished by generally dull wings and indistinct marks and the shape of the ventral appendages; these are much as in Van der Weele's figure of *P. augustipennis*, but the wings are very differently marked, and he does not mention the spots on thorax; I think that his *P. augustipennis* is but a form of *P. mulleri*.

**Neopanorpa augustipennis** Westw. (Fig. 26).

From Pahang: Lubok Tamang, 3,500 ft., Perak: Batang Padang, Jor Camp; 1,800 ft., Selangor: Gombak Valley; and Penin; Siam: Nakon Sri Tamarat, Khao Luang, 2,000 ft., taken in Feb., March, June, Oct.

Westwood states that the thorax has four pale spots; what Van der Weele and apparently Petersen identify as this species has no spots. The wing marks are very variable, but several match Westwood's figure. The basal mark is nearly always evident, though often faint, the forked band is often broken into spots. The ventral appendages of the male are excised at about middle as shown in figure, very different from Van der Weele's figure. A series of heavily marked specimens were taken at Sedagong, (Pulau Tioman), some are as heavily marked as the figure of *R. formosanus*. *N. claveri* is probably the same form.

**TRICHOPTERA.**

**SERICOSTOMATIDAE.**

**Goerodes abrupta** sp. n. (Fig. 40.)

Generally similar in color to the other species but rather more yellow; the fore-wings with three hyaline white spots; one in subcostal area before end of subcosta, one over connection from fork 2 to fork 3, and one toward base, just before the forking of median vein. The venation is similar to that of other species except near the arculus; here the connection from anal to fork 5 is much as in *ursina*, that is near the base of fork 5, but the cubitus before fork 5 is more sinuate and the first anal also sinuate so as to make the two veins approach each other closely, almost forming a cell before fork 5 above arculus; the second anal just misses the hind margin. In hind wing fork 2 about one-half way back on discal cell, and forking of median vein scarcely before base of discal cell.

Expanse 12 mm.

From Perak: Batang Padang, Jor Camp, 1,800 ft., 10 March; two females. Closely related to *ursina*, but smaller, and curving of cubitus and first anal different.

**Goerodes continuata** sp. n. (Fig. 39.)

Yellowish-brown, clothed with black and yellow hair, giving it a generally even pale brown appearance; abdomen dark brown; legs pale; antennae annulate. Very similar to *G. ursina* Hagen; fore-wings rather darker and plainly a little more slender; two hyaline spots, one over the

connection from fork 2 to fork 3, and one before forking of median vein. Venation very similar to that of *G. ursina*, except in the anal region near arculus; the connecting veinlet from anal to fork 5 appears as a continuation of anal and runs into lower side of fork 5 nearly one-half way out on the fork; the cubitus before fork 5 is sinuate as in *ursina*, but the first anal is also curved in the same way so that the cell is not narrowed; the second anal runs into the hind margin before it runs into the arculus (in *ursina* missing margin). In hind-wings fork 2 is from one-third to nearly one-half way back on discal cell, and the forking of median barely before discal cell.

Expanse 14 mm.

From Pahang: Cameron's Highlands, 4,800 ft., Jan., March, June, Oct., and Gunong Tahan, 5,500 ft., Dec.; all are females.

In the series of *G. ursina* Hagen are no males, but the first specimen of *G. vulpina* is a male; the females with it appear to be the same as *G. ursina*. I am therefore inclined to believe them the same. In the male *vulpina* the venation is somewhat different from the female, but not near as much so as in *G. cornigera*. *G. continuata* and *G. abrupta* are so similar to the female *ursina* that I cannot believe that the two species of *Goerinella* that are based on males, are the males of the two species of *Goerodes*, although in one case they are from the same localities. It however looks strange that the two *Goerodes* are only females, and the two *Goerinella* are only known from males.

*Goerinella venularis* sp. n. (Figs. 34, 36.)

Yellowish, clothed with gray to brown hairs and scales giving it a generally gray appearance. Palpi of male recurved, clothed with dark gray hair; basal joint of antennae elongate, straight, as long as width of head, densely gray haired, beyond pale, annulate with dark. Wings clothed with scales and fine hair; scales most densely placed on the veins, the veins themselves in fore-wing heavier than usual; some of the cells in basal middle with few scales, the long anal vein very heavy, except tip where it is forked (possibly formed of two veins united). Hind-wings also w<sup>t</sup>h scales and many fine hairs, but the veins less prominent. Venation of hind wings very similar to that *G. piscina*. In fore-wing no folded basal area on costa, and the connection between median and cubitus is much further out, and the cubitus runs into the anal shortly beyond the cross-veins; in shape the fore-wing is more blunt at tip, the outer part of costa not as sloping as in *G. piscina*. Legs very slender, tarsi dark.

Expanse 14 mm.

From Pahang: Cameron's Highlands, 4,800 ft., Jan., March, June.

**Goerinella posticata** sp. n. (Figs. 35, 37, 38.)

Pale yellowish; antennae pale, beyond basal joint annulate with dark, basal joint greatly elongate, somewhat curved, in middle of front part with a large patch of black hair, the hair at tip especially long and clustered; palpi recurved, densely clothed with long hair, that on the outer side pale, on the posterior side mostly black; labial palpi pale, slender; legs rather brownish, tarsi darker. Wings clothed with yellowish and black hairs and scales, a dense row of black hairs just above posterior vein; fringe dark, scales placed mostly on the veins, the costal area with some scales, but other cells with few if any scales, densely hairy: the space before cubital cross-vein mostly bare. Hind-wings densely hairy and with scales on veins. Fore-wings with the anal vein subparallel to the hind margin curved up and ending near tip of wing; the cubitus and median branches are somewhat crowded and run into the anal vein. Venation of hind-wing generally as in *G. piscina*, but the discal cell is very much smaller and the cubitus, although approaching the median fork does not come as near as in *G. piscina* nor *G. venularis*, and the first anal is more remote from the cubitus.

Expanse 14 mm.

From Pahang: Gunong Tahan Padang, 5,500 ft., 16 Dec., and Cameron's Highlands, 4,800 ft., 13 Jan.

**Goera uniformis** sp. n. (Figs. 28, 29.)

Pale; head with mostly long pale hair; palpi largely black-haired on outside, pale nearer tips; basal joint of antennae rather rufous, with dark hair, beyond pale yellowish; abdomen brown, segments margined with pale; legs pale brown, spurs darker. Fore-wings yellowish-brown, with black and yellow hair, the longer, black hairs mostly on the veins. Hind wings fumose, the veins darker, fringe dark. Venation of fore wing similar to others; fork 1 back on discal almost half-way, fork 2 has a short pedicel, fork 3 short, with a very long pedicel, fork 5 bent up at base so that it is very close to the lower branch of median. In hind wings the discal cell is open, fork 1 further back than fork 2, fork 3 short, shorter than its pedicel due to the fact that the cross-vein between median and radial sector is near base of discal cell, fork 5 hardly larger than fork 3, there is no cross-vein between cubitus and median for the cubitus out to middle is so near as to be almost united to the median.

Expanse 16 mm.

From Penin: Siam: Trang, 24 April.

**CALAMOCERATIDAE.****Ganonema brunneum** Ulmer. (Fig. 22.)

Several from Kedah Peak, 3,300 ft., 27 March; Pahang: Cameron's Highlands, 4,800 ft., 12 Oct.; Penin: Siam:

Nakon Sri Tamarat, Febr. The male has the fore-wing with many erect hairs, especially dense along the costal area; the hind femora slightly fringed beneath, the tibiæ and tarsi densely long haired, the hair somewhat appressed and of a pale yellow; the hind tibia are curved (concave on hind edge). Both females have the fork 3 pedicellate, otherwise they agree with Ulmer's figure. Described from Sumatra.

**Ganonema brevipenne** Ulmer.

One from Pahang: Kuala Lumpat, 1 July. It has fork 7 further back on discal cell than any that I have seen; known from Ceylon, India, Borneo, etc.

**Ganonema magnum** sp. n. (Figs. 32, 32a, 33, 33a.)

Yellow brown. Head, palpi, and basal joint of antennæ densely clothed with long yellow brown hair, two tufts below each eye; tufts of similar long hair on pronotum, and on middle and posterior part of mesonotum; pleura mostly smooth and bare, but with a few tufts of long hair, coxae with rows of long hair; antennæ beyond base marked with dark, mostly at tips of joints; abdomen brown. Legs yellow brown, clothed with yellowish-brown to brown hair; on front legs mostly short, on hind and mid legs mostly very long, in male that on posterior side on these tibiae is from 8 to 10 or more times longer than the width of the joint, in the female these tarsi are clothed with yellow hair, the tips marked by black hair. Fore-wings densely clothed with appressed hair; in male with much yellowish, and some black in places, giving the wing a generally dark brown appearance, in female with mostly black hair, the costal edge, however, yellowish, fringe of hind wings black. In both sexes the maxillary palpi are held recurved in front of the face. Fore-wings rather long, venation as figured, similar to that of other species.

Length of fore-wing 19 mm., width 6 mm.

From Pahang: Cameron's Highlands, 4,800 ft., 11 March.

**Asotocerus fuscipenne** Albarda.

From Kedah: Catchment Area near Jitra, April; and Pahang: Cameron's Highlands, 4,800 ft., 5 Dec. Known from Sumatra and Annam.

### LEPTOCERIDAE.

**Oecetis languinosa** McLach.

Two females from Pahang: Cameron's Highlands, 4,800 ft., 26 Jan., agree with the description of this species from Celebes, but a male might show them distinct.

**Oecetinella confluens** Ulmer.

From Pahang: Lubok Tamang, 3,500 ft., 16 March. Widely spread in Malay region.

**Oecetina pretiosa** Bks.

From Selangor: Kuala Lumpur, 13 Febr., and Pahang: Sungai Tahan, 21 Nov. Known from India.

**Leptocella maculata** Bks.

From Selangor: Kuala Lumpur, 26 April; and Penin: Siam: Patalung 19 May, and Trang 23 April. Described from India.

**Notanatolica giloloensis** McLach.

Selangor: Ampang, Oct.; Pahang: Sungai Ringlet, 3,500 ft., 7 March, and W. Java: Preanger Regency, Buitenzorg 600 ft., April 1923.

**Sitodes argentifera** McLach.

Pahang: Cameron's Highlands, 4,800 ft., 14 June. Rather widely distributed, mostly in India.

**HYDROPSYCHIDAE.****Stenopsyche ochreipennis** Albarda.

From Pahang: Gunong Tahan Padang, 5,500 ft., 12 Dec.; Kedah: Catchment Area near Jitra, 8 April; and Penin. Siam: Nakon Sri Tamarat, Khao Ram, April and May.

**Amphipsyche vedana** Banks.

From Perak: Taiping, 16 Dec.; and Penin. Siam: Nakon Sri Tamarat, Khao Ram, Febr. Described from India.

**Amphipsyche minima** sp. n. (Fig. 31.)

♀. Pale whitish or in parts pale yellowish; antennae faintly dark at tips of joints, face with a silvery white spot each side by eyes; thoracic notum rather reddish; abdomen black with pale band at tips of segments. Wings hyaline whitish, clothed with fine yellow hair, in the anal area densely hairy giving it a yellow tinge; vein on upper side of fork 3 distinctly margined with brownish-yellow, and a brownish shade over anastomosis and continuing across the median cell. In fore-wings both fork 1, and 2 are long pedicellate. Hind wing similar to *A. proluta*, except no cross-vein above fork 5, and the stem of fork 3 is geniculate at its origin. Tibia and basitarsus of second leg greatly broadened, basitarsus about two-thirds as long as tibia, second tarsal joint only about one-third of basitarsus and not one-half as wide, third joint scarcely broadened, fourth and fifth not at all.

Expanse 17 mm.

From Malay Penin: Kedah, Catchment Area near Jitra, 9 April.

**Macronema spectabilis** sp. n. (Figs. 5, 11.)

♂. Head clear yellowish, face next to eyes silvery; basal joints of antennae yellowish, beyond some joints marked with brown, palpi pale; third joint dark; legs pale yellowish, front tibiae black, tips of mid and hind tibiae

dark, apical spurs brown, others yellowish; thoracic notum black, a yellow spot each side near base of fore-wings; abdomen brown. Fore-wings mostly black, with white spots; three costal ones, two smaller in apical area, one behind near hind margin and a streak in basal posterior part, partly interrupted; hind-wings dull brownish, the costal part for over one-half way and a costal spot toward tip white. Discal cell a little longer than wide. fork one with pedicel as long as the discal cell. Hind tibiae with a row of long fine pale hair.

Expanse 20 mm.

From Malay Penin: Kedah Peak, 3,000 ft., 16 March.

*Macronema albardana* sp. n. (Fig. 7.)

This is the form figured by Ulmer, Selys Monog. pl. V, fig. 30, as a form of *fastuosum*. I have both sexes and it is so differently marked from *fastuosum* (of which I have seen many specimens) that it is surely distinct. The basal two-thirds to three-fourths of fore-wing is pale, clothed with golden hair, the apical part black. The hind-wings yellowish, brown at tip. The head is yellow, unmarked except the usual silvery mark each side near eyes. Palpi brownish; legs pale, tibiae one dark, and tip of tarsi, mid-tibiae and tarsi dark at tips. Antennae with basal joints pale, then several joints brown, and beyond the joints are dark at tips. Fore-wing with pedicel of fork one shorter than discal cell.

Expanse 17 to 18.5 mm.

One (♂) from Annam, and female from Perak: Taiping Hill, Dec.

*Macronema similior* sp. n. (Fig. 1.)

I believe this is what Ulmer has figured in Selys Monograph pl. IV fig. 29 as *fenestratum*; it however is a smaller and darker species, and can be at once distinguished by the dark front tibiae. I have seen a number of specimens of *fenestratum* agreeing with the description and figure of Albarda and in both sexes the front tibiae are entirely pale, and there are various other differences in marking of the wings.

The head is yellowish with a dark spot each side near eyes with a silvery sheen, on the vertex is a dark spot each side, nearly meeting in the middle; basal joints of antennae pale, beyond are several brown joints and then pale with dark tips; palpi pale; legs pale, front tibiae and mid and hind tarsi dark, spurs pale; thoracic notum black; abdomen brown. Fore-wings nearly black, with three large costal spots, the one near middle very large, in apical area a small white spot just beyond last costal one, in the posterior part are two or three patches of white scales (but the membrane

dark as elsewhere) and two similar patches of white scales on the basal part. Hind-wings dull brown, the costal area pale to near tip. Discal cell plainly longer than broad, fork one with pedicel much longer than discal cell.

Expanse 17 mm.

From Selangor: Kuala Lumpur, and Ayer Itam, and Penin. Siam: Trang, others from the Philippine Islands, in March, April and November.

In *M. fenestratum* Albarda there are four costal spots, the extra one nearer the base. The patches of white scales may be more or less rubbed so that some specimens at first look different.

**Macronema fastuosum** Walker.

Many from Kedah: Catchment Area near Jitra, April; Penin. Siam: Nakon Sri Tamarat, Khao Ram, Febr.; Trang, April. Widely distributed from Ceylon, India to Indo-China; the form on some of the Malay Islands known as *fasciatum* is scarcely distinct.

**Macronema fenestratum** Albarda.

From Selangor: Kuala Lumpur, Jan., Febr., April, May, many specimens agreeing well with the description of this Sumatran species. What Ulmer has figured as this is a different species.

**Macronema dohrni** Ulmer.

From Penin. Siam: Nakon Sri Tamarat, Khao Luang, 2,000 ft., March.

The species of *Macronema* from this general region may be separated as follows:

- |   |                     |
|---|---------------------|
| 1—Vertex largely black; two large costal spots, beyond wholly dark, unmarked .. .. ..   | <i>dohrni.</i>      |
| Vertex pale; often some pale in apical part .. .. ..  | 2                   |
| 2—Wing pale, a dark bar nearly across near middle, apex usually infuscate .. .. ..  | <i>fastuosum.</i>   |
| Wing otherwise marked .. .. ..  | 3                   |
| 3—Wing pale, with yellow hair, the apical third (or more) wholly dark .. .. ..  | <i>albardana.</i>   |
| Wings with various pale spots .. .. ..  | 4                   |
| 4—But two large costal spots, but little separated .. .. ..   | 5                   |
| Three large costal spots near together .. .. ..   | 6                   |
| 5—No basal spot, one pale spot in apical area <i>distinguendum.</i><br>A basal spot, and two in apical area .. .. ..  | <i>spectabilis.</i> |
| 6—The most basad of the three costal spots reaches along costa to base evenly .. .. ..  | <i>similior.</i>    |
| The most basad reaches toward base, but there is another spot along the way, either separated or connected to this costal edge; dark co'or paler than in <i>similior</i> .. .. .. | <i>fenestratum.</i> |

**Hydropsyche javanica** Ulmer.

From Pahang: Lubok Tamang, 3,500 ft., 10 March; Kedah: Catchment Area, near Jitra, 8 April. Pahang: Cameron's Highlands, 4,800 ft., June; Sungai Tahan, 29 Nov.; Selangor: Kuala Lumpur, Aug., Dec.; Pahang: Kuala Teku, Dec.; Perak: Batang Padang, Jor Camp, 1,800 ft., May; and Penin. Siam: Nakon Sri Tamarat, Khao Ram, 1 March.

**Hydromanicus taprobanes** Hagen.

From Pahang: Lubok Tamang, 3,500 ft., March; Gunong Tahan Padang, 5,500 ft., Jan.; Cameron's Highlands, 4,800 ft., March; Perak: Batang Padang, Jor Camp, 1,800 ft., June.

Described from Ceylon.

**Hydromanicus flavoguttatus** Albarda.

Several from Penin. Siam: Nakon Sri Tamarat, Khao Ram, 1,500 to 2,000 ft., Febr. and March. Known from Sumatra, Java, Borneo, and Celebes.

**Hydromanicus malayanus** sp. n. (Figs. 6, 17, 18.)

Head and pronotum black, clothed with golden hair, meso- and metanotum rufous, also with golden hair; palpi pale, with mostly yellowish hair; antennae yellowish, tips of some joints blackish; legs pale, front and mid tarsi rather darker, hind tibiae quite dark, spurs pale; abdomen mostly brownish. Fore-wings golden haired, irregularly irrorate with black, on the basal part forming large, more or less connected, mostly transverse spots, but beyond the anastomosis mostly longitudinal along the veins, but a definite band before tip. The pale areas are very much larger than those in *flavoguttatus*. Hind wings quite dark brown, uniform. Discal cell two and one-half times as long as broad, broadest before the middle; fork one has a pedicel one-half its length, fork 2 back on discal cell before middle, fork 3 opposite end discal cell, fork 4 as far back as fork 2, fork 5 not quite as far back.

Expanse 23 to 25 mm.

Kedah Peak, 3,000 ft., 16 March; Pahang: Kuala Teku, 7 Dec.; Kuala Lipis 28 March.

**Hydropsychodes opposita** sp. n. (Figs. 13, 16, 19.)

Head dark, with mostly yellowish hair both below and above; palpi brown; antennae yellowish-brown, faintly annulate; thoracic notum with yellowish hair; legs pale to brownish, tarsi darker, spurs pale. Fore-wings pale to dark brown, with several large areas of white hair; one of them at base, mostly in hind part, a large one at outer angle reaching to the cubitus and enclosing a small black spot on the hind margin at end of anal vein, a pale costal mark over the stigma and extending behind and usually uniting more or less completely with the posterior spot in the region of

the cells; at each end of the white stigmal spot is a black mark and before the basal one is a pale costal spot which is continued as a line toward the base of wing; in the apical area there are usually a few pale spots; fringe dark, with three or four patches of white at ends of the veins; hind-wings infuscate, darker around fork 5, fringe dark.

Venation much as usual; fork 1 slender, but fairly long, forks 2 and 3 equal, fork 4 scarcely before 3, and fork 5 a trifle before 4. In hind wings fork 2 is back nearly one-half way on discal cell, fork 3 long pedicellate, fork 5 quite a way before base of discal cell.

Claws of front and hind-tarsi in male abnormal, that of front tarsus with two enlarged spines on side.

Expanse 13 to 15 mm.

From Selangor: Kuala Lumpur, Febr., March, April, July.

***Phylocentropus orientalis* sp. n. (Figs. 25, 27.)**

Dull yellowish; vertex with yellowish hair; antennae pale yellowish, darker towards tip; palpi brown. Thoracic notum with mostly yellow hair; abdomen dark brown above, paler beneath; legs brownish-yellow, tarsi more brown, spurs pale. Fore-wings brownish, clothed with much short yellowish hair, mixed with some black, outer fringe with black at ends of veins; hind-wings dull gray, with gray hair.

Venation of fore-wing as figured, typical of the genus; in hind-wing forks 1 and 2 are also both sessile on discal cell, fork 3 pedicellate, fork 5 not reaching as far back as discal cell.

Male genitalia small and inconspicuous, the superior appendages pale.

Expanse 19 mm.

From Pahang: Cameron's Highlands, 4,800 ft., Jan. and June; Gunong Tahan Summit, 7,186 ft., 22 Jan. The occurrence of this genus in Malaya is remarkable, as the other species are only in North America.

***Polyplectropus analis* sp. n. (Figs. 3, 4.)**

Head dark, with black hair and some yellow between antennae and on vertex; antennae pale, annulate with brown; palpi brown; legs dull brownish-yellow, spurs pale; thoracic notum with mostly dark hair; abdomen brown above, paler beneath. Fore-wings dark brown, nearly uniform, with spots of yellow hair, the entire anal region with yellow hair out to end of anal vein, the upper edge of the streak irregular, and near the end it turns up towards middle of wing, sometimes there are faint brown bars across this yellow streak. Elsewhere on the wing are groups of small spots of yellow; about one-fourth way from base is one cluster, before middle is another cluster, mostly toward

costa; several larger spots before the stigma, and one behind it; a large cluster toward the outer angle, and a few in apical area; fringe mostly dark, but with a few yellow spots. Hind-wings infuscate, fringe long and dark. Venation in both wings about as in *P. javanus* as figured by Ulmer, but in fore-wing fork 4 is pedicellate, the cross-vein being at its base or just a little on the base of fork.

Expanse 17 to 20 mm.

From Pahang: Gunong Tahan Padang, 5,500 ft., Dec., Jan., and Cameron's Highlands, 4,800 ft., Jan.

Differs from *P. javanus* by larger size, genitalia, and by the long yellow streak on anal region of fore-wings. *Polycentropus nubigenus* Hagen is a *Polyplectropus*, but the wing is rather evenly spotted with yellow.

**Dipseudopsis moesta** sp. n. (Fig. 9.)

Head black in front, reddish-brown on top; antennae and palpi black; thorax black; abdomen brown to blackish, spurs dark. Wings brown, nearly uniform, vein darker, fore-wings with an oblong hyaline white mark over base of median cell and extending back to the cubitus, otherwise no marks.

Venation similar to others; fork 1 very short, fork 3 with pedicel very short, median cell quite long, its base a little before fork 5; in hind wings fork 2 is back to discal but not pointed there. Inner spur of the hind tibia not as long as the outer one, its apex with two processes, one short, stout, slightly curved and pointed, the other longer, a slender hook.

Expanse 25 mm.

From Johore: Lubok Kedondong, n.w. of Mt. Ophir, Nov.

The black antennae, palpi, and legs readily separate it.

**Dipseudopsis contorta** sp. n. (Fig. 20.)

Head black; antennae yellowish; palpi yellow-brown; pronotum yellowish; mesonotum black; metanotum brown; abdomen brown above, paler beneath; legs dull yellowish or brownish, spurs pale. Wings brown, nearly evenly colored, several pale spots; one above base of fork 1, a spot in bases of apical cells 4 and 5, and sometimes faintly in 6, an oblique spot from base of median cell back to the cubitus, and a large spot over arculus up to cubitus, a fainter spot on the costa near end of the subcosta. The inner spur of the hind tibia divided near tip into three parts, one rather broad, its tip recurved, the two others slender and curved and in most views crossed. Venation very similar to that of *D. stellatus*; pedicel of fork 3 one-half its length, fork 1 extremely short; in hind wings fork 2 goes back to cell and quite broad there.

Expanse 27 mm.

From Pahang: Kuala Tahan 21—23. Nov., and Selangor: Kuala Lumpur, 29 Jan.

The markings are extremely similar to those of *D. stellatus*, but the inner spur is quite different. The figure of Ulmer, Ann. K. K. Naturhist. Hofmus., Wien, XX, p. 96, fig. 75c, 1905, *Dipseudopsis* sp., appears to be this species, but it was not described.

*Dipseudopsis nebulosa* Albarda. (Fig. 14.)

From Pahang: Kuala Teku, Dec.; Sungai Tembeling, Nov.; Kuala Tahan, Nov.; and Penin. Siam: Trang, 26 April, 16 May. Described from Sumatra.

*Dipseudopsis varians* Ulmer. (Fig. 12.)

From Negri Sembilan: Kuala Pilah, 28 Dec.; Pahang: Kuala Tahan; and Penin. Siam: Trang, 16 May. Described recently from Perak.

*Dipseudopsis stellatus* McLach. (Fig. 8.)

Several from Penin. Siam: Fatalung, 1 May. Described from Southern China.

The species of *Dipseudopsis* known from this region are tabulated below:

1—Pronotum black or nearly so, as dark as mesonotum ..	2
Pronotum pale, reddish or yellowish, paler than mesonotum .. .. .. ..	3
2—Antennae and legs yellowish-brown; vertex mostly dark; several pale spots in fore-wings	<i>stellatus</i> .
Antennae and legs black; vertex rufous; but one pale spot in each fore-wing .. .. ..	<i>moesta</i> .
3—Head mostly blackish .. .. ..	<i>contorta</i> .
Head reddish or yellowish .. .. ..	4
4—Male with large pale spot over three cells before middle .. .. ..	<i>nebulosa</i> .

Male with only one cell pale before the middle *varians*.

*Esperona orientalis* Navas from Tonquin is evidently a *Dipseudopsis*, quite possibly *D. stellatus*.

*Chimarra pedalis* sp. n. (Fig. 23.)

Black, clothed with black hair, fully as deep black as *C. concolor*, but differs from that and all others from this region in having the front tibiae and tarsi nearly snow-white, and the mid tarsi almost white, and mid tip very pale on outer side. Wings with black hair; a hyaline white line over base of fork 2 and back to median vein, another one over cross-vein from median to cubitus, and one on areculus. Radial cross-vein much beyond middle of discal cell; fork 1 slender, back a little on discal cell; fork 2 broad, and broad at base; fork 3 scarcely longer than its pedicel; fork 5 before the areulus; radial sector before discal cell

bent upward to form the nearly smooth spot. In hind-wings fork 1 scarcely reaches discal, fork 2 a little back on discal, fork 3 very short, about equal to discal cell, fork 5 very broad and much before base of discal cell.

**Expanse** 14 mm.

From Kedah Peak: 3,300 ft., 10 March; Selangor: Bukit Kutu 3,500 ft., 15, April.

**Chimarrha** sp.

From Kedah Peak, 3,300 ft., 13 March, one specimen very similar to *C. concolor* Ulm., but a little smaller, and hardly as deep black.

**Tinodes** sp.

Two from Pahang: Cameron's Highlands, 4,800 ft., Jan.; both are females and are probably new.

**Psychomyia** ? sp.

Several specimens in poor condition go here or to *Psychomyiella*.

### RHYACOPHILIDAE.

**Rhyacophila** sp.

A large species (24 mm. expanse) is represented by one female from Pahang: Cameron's Highlands, 4,800 ft.; it has an unusually dark stigma, otherwise rather evenly colored; the venter has a very small tooth.

**Rhyacophila malayana** sp. n. (Fig. 2.)

Yellowish; head with some black but mostly yellowish hair on vertex, thorax with black and some yellow hair: antennae yellowish, darker towards tips; legs pale, tarsi and spurs dark; abdomen black above, pale beneath. Fore-wings yellowish-brown, clothed with some black and much yellowish hair, marmorate with brown, mostly in small spots, the larger spots along costa, often extending back as faint, narrow, irregular fasciae; a hyaline white spot, surrounded by dark, over forking of median vein; along outer margin brown and yellow alternate. Hind wings fumose, stigma dark. In fore-wings forks 1 and 2 equal, fork 3 plainly longer than its pedicel, fork 4 not longer than 3 and not as far back as fork 2, fork 5 as far back as base of discal cell. In hind-wings fork 2 is a little longer than 1, fork 3 twice as long as its pedicel. Venter of male with a very small tooth, in female a much longer process. Male appendages related to *R. curvata* Mort., but apical part of lower appendages longer, especially on top.

**Expanse** 16 mm.

From Penin. Siam: Nakon Sri Tamarat, Khao Ram, March; and Pahang: Gunong Tahan Padang, 5,500 ft., Dec.

**Rhyacophila cameroni** sp. n. (Fig. 10.)

Dull yellowish, head with erect black hair, thorax also with tufts of black hair; abdomen black above, pale below; last section of lower appendages much paler than basal part; basal parts of legs pale, beyond femur darker, and hind tarsi almost black; spurs dark. Fore-wings evenly fumose, clothed with black hair, giving a generally even dark brown color, without pale spots; hind-wings also fumose, darker near costal tip. In fore-wings forks 1 and 2 are equal, fork 3 plainly shorter than its pedicel, fork 4 rather wide, not near as far back as fork 2, fork 5 fully as far back as base of discal cell. In hind-wings fork 2 longer than 1, fork 3 only about one-half of fork 2. Venter with a prominent tooth before tip.

Expanse 14 mm.

From Pahang: Cameron's Highlands, 4,800 ft., 13 Jan.

**Apsilochorema malayana** sp. n. (Fig. 21.)

Fore-wings fumose, with a large dark stigmal mark; veins in middle and basal part with the usual erect diverging hairs, towards tip the membrane has fine hair, partly yellowish; fringe mostly black; an oblique, slender, hyaline-white streak nearly across the wing near middle; hind wings fuscous, fringe darker. Antennae and palpi dark; antennae paler on the basal joints; legs mostly dull brownish or yellowish, front tibiae with a pale mark beyond middle; spurs nearly black. Wings very similar to other species; less space between the radius and sector at middle; forking of median almost as far basad as origin of radial sector; fork 5 rather wide at base; and the forking of anal much beyond that of median; in hind-wings the upper side of fork 5 is close to the vein in front. Male genitalia very long, the superior appendages slender, parallel, and their tips sharp and bent down; the inferior piece not as broad at base as in the other species.

Expanse 12 mm.

From Pahang: Gunong Tahan Padang, 5,500 ft., Nov. 30, Dec. 7, 20, Jan. 6; and Cameron's Highlands, 4,800 ft., Oct.

**Explanation of Plates.**

- Fig. 1. *Macronema similior*, forewing.
- „ 2. *Rhyacophila malayana*, genitalia, side.
- „ 3. *Polyplectropus analis*, genitalia, side.
- „ 4. „ „ „ top.
- „ 5. *Macronema spectabilis*, „ side.
- „ 6. *Hydromanicus malayanus*, forewing.
- „ 7. *Macronema albardana*, genitalia, side.

- 8. *Dipseudopsis stellatus*, enlarged spur.
- 9. " *moesta*, enlarged spur.
- 10. *Rhyacophila cameroni*, genitalia, side.
- 11. *Macronema spectabilis*, forewing.
- 12. *Dipseudopsis varians*, enlarged spur.
- 13. *Hydropsychedes opposita*, mid-tarsus.
- 14. *Dipseudopsis nebulosa*, enlarged spur.
- 15. " *spectabilis*, enlarged spur.
- 16. *Hydropsychedes opposita*, front tarsus.
- 17. *Hydromanicus malayanus*, genitalia, side.
- 18. " " " above.
- 19. *Hydropsychedes opposita*, genitalia, side.
- 20. *Dipseudopsis contorta*, enlarged spur.
- 21. *Apsilochorema malayana*, wings and genitalia.
- 22. *Ganonema brunneum*, genitalia, side.
- 23. *Chimarrha pedalis*, genitalia, side.
- 24. *Phanoleon bicostatus*, costal area of wing near base.
- 25. *Phylocentropus orientalis*, fore-wing.
- 26. *Neopanorpa augustipennis*, genitalia.
- 26a. *Neopanorpa infuscata*, ventral appendage.
- 27. *Phylocentropus orientalis*, genitalia side.
- 28. *Goera uniformis*, genitalia, above.
- 29. " " " side.
- 30. *Hagenomyia*, pronotal marks, a-eurystictus, b-nicobaricus, c-sumatranius.
- 31. *Amphipsyche minima*, fore-wing.
- 32. *Ganonema magnum*, wings.
- 32a. *Ganonema magnum*, head, side.
- 33. *Ganonema magnum*, genitalia, above.
- 33a. *Ganonema magnum*, genitalia, above.
- 34. *Goerinella venularis*, genitalia, side.
- 35. *Goerinella posticata*, genitalia, side.
- 36. " *venularis*, fore-wing.
- 37. " *posticata*, fore-wing.
- 38. " *posticata*, head, side.
- 39. *Goerodes continuata*, fore-wing, anal corner.
- 40. " *abrupta*, fore-wing, anal corner.





